A special meeting of this taxpayers' protective association has been called to be held this evening at 7:30 o'clock. * * *

'The passage of the proposed ordinance,' said a prominent taxpayer this forenoon, 'would be nothing short of an outrage.'

I wonder what this 'prominent taxpayer' thinks about the ordinance now. It is a sad thing to suggest, but possibly he himself or some member of his family has died as a result of the senseless opposition, in which he took part, to a reasonable and public-spirited health measure.

In an evening paper of March 28, 1902, there appeared a note to the effect that a correspondent of the Associated Press had a talk with the State Health Officer of Texas, regarding the mosquito theory. He was reported as of the opinion that 'The theory won't hold water,' and stated that he would not accept it. He stated that he had been familiar with yellow fever from childhood and 'knew enough to keep rigid quarantine and disinfecting rules in effect.' A little more than a year later, however, he had a new lesson in the Texas outbreak of yellow fever in the late summer and autumn of 1903, and he too changed his mind in regard to mosquitoes.

L. O. HOWARD.

THE POSSIBILITY OF ABSORPTION BY HUMAN BEINGS OF NITROGEN FROM THE ATMOSPHERE.

ANY one reading this article would conclude that it has been proved that plants can absorb free nitrogen from the atmosphere without the aid of bacteria, and that Dr. Wohltmann is a believer in this. The quotation which the writer gives does not bear out this interpretation of Dr. Wohltmann's work:

> The association of the plant with the bacteria is not a necessity but an expedient, and whenever there is a rich supply of nitrogenous elements in the soil, they (the plants) dispense with the bacteria and *with the free nitrogen,* which the latter make available, by directly secreting it from the chemical combination of soil or air in which it is held suspended.

The italics are mine, but the translation is by Mr. Gibson. Dr. Wohltmann is far from saying that plants absorb free nitrogen in the absence of bacteria; but distinctly says, in the above quotation, that in the absence of the bacteria they dispense with the free nitrogen and take the nitrogen necessary for their growth in combination from the soil.

This is no new discovery, for Hellriegel, in 1886 and later, showed by decisive experiments that when the bacteria are absent, Leguminosæ, like other plants, can only take their nitrogen in compounds, and their growth, within limits, is a function of the combined nitrogen presented. In the presence of bacteria Leguminosæ can utilize the free nitrogen of the air, and build it up into organic compounds.

Before speculating on the possibility of the absorption of free nitrogen by human beings, it is well to remember that there is no evidence that higher plants can assimilate nitrogen of the air without aid of bacteria.

G. S. FRAPS.

A TREE'S LIMB WITHOUT BARK.

TO THE EDITOR OF SCIENCE: In the summer of 1902 a large ash tree, some two feet in diameter, on the university campus was struck by lightning. The current, after knocking off a few branches, passed down on both sides of the main trunk leaving here merely two small furrows in the bark. From one limb, some six inches in diameter and perhaps ten feet from the ground, the bark all around was completely stripped for a distance of about five feet. To the surprise of some of us the leaves on this branch did not wither, nor fall to the ground till the leaves of the rest of the tree fell in the autumn. The next spring the leaves put out on this branch as on the rest of the tree; so again in 1904 and again the present year. In other words, the vegetation of this branch, wholly girdled for a space of several feet, differs from that of the rest of the tree only in being slightly less vigorous. The wood of the girdled portion looks much like a seasoned log of ash wood. The tree itself is rather less vigorous than the neighboring ashes, and will probably survive but a few years longer. Is it common for a limb,

stripped of its bark, to thus survive for three seasons? JAS. LEWIS HOWE.

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SPECIAL ARTICLES.

PHYSICAL CHARACTERS AND HISTORY OF SOME NEW YORK FORMATIONS.[1]

WE are accustomed to define historical geology as the history of the earth and its inhabitants, and this definition no doubt fully covers the subject. But it may be questioned if, in the ordinary treatment of the subject, such as it receives in our current text-books and lecture halls, we do it justice to the full extent suggested by our definition. Is it not too often merely the history of the inhabitants of the earth that we are treating, giving the history of the earth itself, *i. e.,* its physical development, only scant recognition? I believe I am not going too far when I say that we give proportionately too much attention to the biologic or paleontologic side, and too little to the physical or stratigraphic. I do not wish to be understood to say that paleontology receives too much attention in our institutions of learning. Far from it. Paleontology is not receiving a fraction of the attention it requires, and which it will receive in the future when our curricula are more normally balanced. But paleontology is not the whole of historical geology. Stratigraphy, or the physical characters and physical history of the rocks of the earth's crust—paleophysiography (if I may use a pet term, in spite of objections raised against it)—is fully one half of historical geology.

It is true, of course, that historical geology reposes on a foundation of paleontology—the divisions of the earth's history are based on the progress of life, and not, as has been too often assumed, on breaks in the sedimentary series, extensive and important as these may be. The standard of comparison must be a series of sediments which contain a continuous record of development, and since it is only in marine sediments that we get a continuous series, only marine formations, and such as do not represent merely local conditions, must be selected as our standard of reference.

Much as we prize, and justly prize, the classical standard of our North American Paleozoic series—the incomparable column furnished by the strata of the state of New York—and loath as we may be to attack any part of it, yet we must confess that it is not a perfect column throughout, and that the imperfection which it embodies can not be overlooked. Indeed, the sworn guardians of this monument have themselves recognized that it is an incomplete structure, and have introduced such foreign elements as the Cincinnatian group and the Richmond formation, besides accepting emendations proposed by others, such as Acadian and Georgian. They have, however, sought consolation for this forced recognition of the imperfections of the New York series, by proposing that the world at large accept the broader terms of the New York classification—Taconic, Champlainic, Ontaric—in place of the better known, though not always prior, terms Cambric, Ordovicic and Siluric.

But it is one thing to recognize the absence of an element in the standard series and to fill the gap by a foreign representative, and another to regard an old and well-known formational unit as imperfect, and as inexpressive of the time element which it represents, and to acquiesce in its replacement by another. Yet I believe this is what we shall come to in the case of such old standards as the Medina sandstone and the Salina group, not to speak of the Oneida conglomerate, formations which are still tolerated in the standard scale of North American Paleozoic formations, but which in a very imperfect manner represent the chronologic epochs for which they are commonly used. This is due to the fact that they were not deposited in the open sea, but rather under peculiar conditions, *i. e.,* estuarine, if not continental, in the case of the Oneida and Medina, and salt sea, if not desert, conditions in the Salina. Moreover, it is now pretty well ascertained that the typical Oneida

[1] An address delivered before Section E, American Association for the Advancement of Science, Syracuse meeting, July 21, 1905.